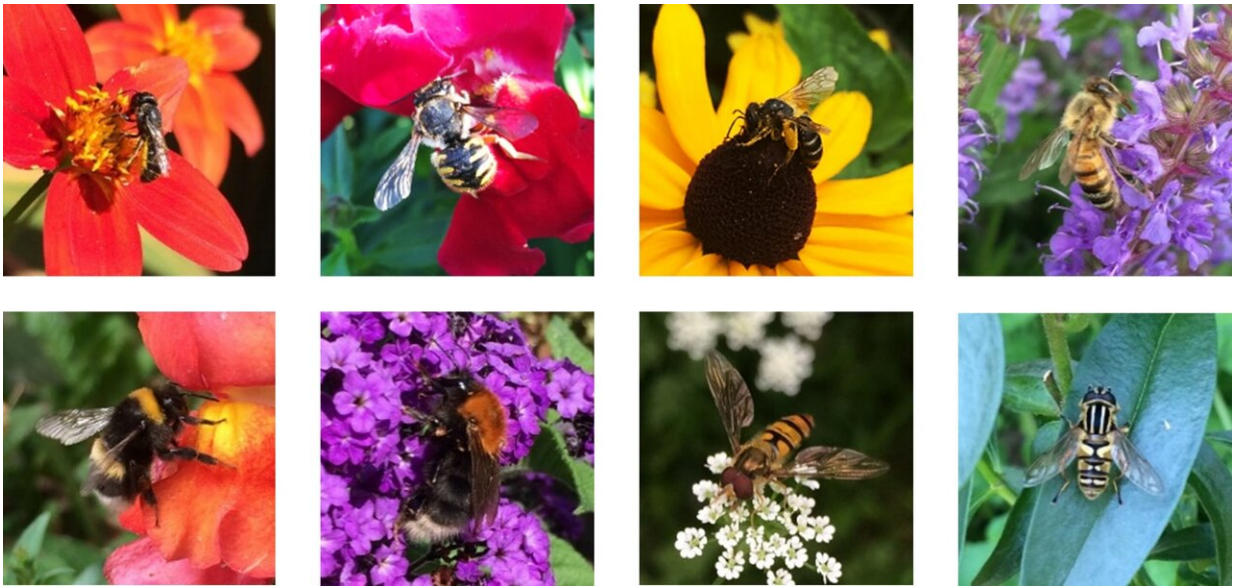


Urban bees: pollinator diversity and plant interactions in city green spaces

July 15 2020



Pollinator photo compilation from experiment. Credit: B. Daniels et al, 2020 (PLOS ONE, CC BY)

With the right mix of plants, urban green spaces can be a rich habitat to support diverse pollinators, according to a study published July 15, 2020 in the open-access journal *PLoS ONE* by Benjamin Daniels from RWTH Aachen University, Germany, and colleagues.

With cities expanding and insect populations rapidly declining across the globe, incorporating insect-friendly green spaces into [urban design](#) is a

critical step to bolster pollinator populations—intrinsically valuable in their own right as well as necessary for more than 75 percent of the world's food supply. In this study, Daniels and colleagues surveyed diverse green spaces across the German city of Aachen to assess plant-pollinator interactions within an [urban environment](#).

The authors categorized Aachen's green spaces into four categories: recreational parks; community gardens; the cemetery; and a "representative" park in the city center, with a rural reference site at Aachen's outskirts as a control—focusing on two different park elements within each study site, flower beds and insect-pollinating trees (specifically Tilia, or linden trees). Daniels and colleagues then surveyed these sites to observe visiting pollinators in thirty-minute intervals from 10AM-5PM in sunny, non-windy conditions from May to August 2016 (with the linden trees observed during their bloom period, from June 21-July 15)—recording 7723 total interactions between pollinators and plants.

At the rural control site, the average number of observed pollinator visits was 46.2 ± 14.6 within 30 minutes. Community gardens showed similar levels of visitation (43.7 ± 23.0 per 30 minutes), but average insect visits for the representative park, recreational parks, and cemetery were significantly lower (mean visitation rates of 21.0 ± 12.6 , 20.8 ± 15.5 and 17.8 ± 10.1 respectively). The authors note that the composition of pollinators varied across park types as well, with community gardens and the rural site showing similar—and significantly higher—frequencies of wild bee and hoverfly visits. In contrast, the visitation rates of flowering linden trees showed similar frequencies for all tested park types (with an average ranging from 12.9 visits/30 minutes (cemetery site) to 16.4 visits/30 minutes (recreational parks). The linden trees also showed higher rates of bumblebee and honeybee visitors as compared to other pollinators.

The authors note that though this study only ran during the peak bloom season, from May to August, future studies should run year-round in order to accurately gauge pollinator behavior. They also note that recreational parks showed comparably low visitation rates of pollinators as compared to other green spaces in Aachen, but would likely have high potential to provide additional diverse resources for pollinators via additional tree plantings or small flower beds—and encourage future policies for integrated management of urban parks as key habitats for pollinators.

The authors add: "In these times of global insect decline, cities and especially [urban green spaces](#) show a high potential to provide habitats for a variety of insect groups. The design and management of urban green spaces have a strong impact on the diversity and abundance of pollinators in cities."

More information: Daniels B, Jedamski J, Ottermanns R, Ross-Nickoll M (2020) A "plan bee" for cities: Pollinator diversity and plant-pollinator interactions in urban green spaces. *PLoS ONE* 15(7): e0235492. [DOI: 10.1371/journal.pone.0235492](https://doi.org/10.1371/journal.pone.0235492)

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